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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/759,449	01/16/2004	Chin-Jui Chang	65765-0085	7829

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RADER, FISHMAN & GRAUER PLLC  
39533 WOODWARD AVENUE  
SUITE 140  
BLOOMFIELD HILLS, MI 48304-0610

EXAMINER

PATTERSON, MARC A

ART UNIT	PAPER NUMBER
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1772

DATE MAILED: 03/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/759,449

Applicant(s)

CHANG ET AL.

Examiner

Marc A. Patterson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

**NEW REJECTIONS**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 – 2, 4 – 7, 11 – 14 and 16 – 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wycech (U.S. Patent No. 5,755,486) in view of Anfuso et al. (U.S. Patent No. 5,086,080).

With regard to Claim 1, Wycech discloses a composition useful for forming a reinforcing body (reinforced structure, therefore a structural form; column 3, lines 10 - 26) which is a foam (column 6, line 12) comprising 0 - 20% by weight acrylonitrilebutadiene rubber (a rubber), 0 - 20% polyisoprene and 30 - 70% of an epoxy resin (bisphenol A liquid epoxy resin; column 5, lines 30 - 65); Wycech fails to disclose a composition comprising a styrene - butadiene - styrene (SBS) block copolymer (which is a polystyrene).

Anfuso et al teach that SBS block copolymer is equivalent to polyisoprene in the making of a structural foam (column 4, lines 15 - 30), for the purpose of making a foam having good impact resistance (column 1, lines 15 - 20). One of ordinary skill in the art would therefore have recognized the advantage of providing for the SBS of Anfuso et al in Wycech et al, which comprises a foam, depending on the desired adhesion to impact resistance of the end product.

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It therefore would have been obvious for one of ordinary skill in the art at the time Applicant's invention was made to have provided for an SBS block copolymer in Wycech et al in order to obtain a foam having good impact resistance as taught by Anfuso.

With regard to Claims 2, 4 – 7, 14, 16 – 19, Wycech discloses 0 - 10% of a pigment (carbon black; column 6, lines 13 – 16), 1 – 30% glass microspheres (columnn 5, lines 58 - 65), 0 - 10% blowing agent (azodicarbonamide; column 5, lines 58 - 65), 0 - 5% accelerator (modified urea, therefore a catalyst; column 6, lines 13 - 16) and 0.1 to 5% of a curing agent (dicyandiamide; column 5, lines 31 - 43).

With regard to Claims 11 – 13 and 23 – 27, the composition has a compressive strength of at least 1500 pounds per square inch (column 4, lines 48 - 51); Wycech therefore discloses a compressive strength of 1422 to 2129 psi. Wycech and Anfuso et al fail to disclose a percent expansion of from 80 – 220% and from 95 – 200% and from 129 – 147% at a temperature of at least 300 degrees Fahrenheit. However, Wycech discloses a percent expansion of at least 1% at room temperature (following expansion; column 4, lines 43 - 60 of Wycech). Therefore, the percent expansion would be readily determined through routine optimization by one having ordinary skill in the art depending on the desired end use of the product. It therefore would be obvious for one of ordinary skill in the art to vary the percent expansion, therefore compressive strength, since the percent expansion would be readily determined through routine optimization by one having ordinary skill in the art depending on the desired end result as shown by Wycech and Anfuso et al. in the absence of unexpected results. *In re Boesch and Slaney*, 205 USPQ 215 (CCPA 1980).

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3. Claims 3 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wycech (U.S. Patent No. 5,755,486) in view of Anfuso et al. (U.S. Patent No. 5,086,080) and further in view of Kawasaki et al. (U.S. Patent No. 5,782,730).

Wycech and Anfuso et al. disclose a composition useful for forming a reinforcing body as discussed above; the composition comprises 3.55% fumed silica (column 6, lines 48 - 65). With regard to Claims 3 and 15, Wycech and Anfuso et al. fail to disclose a composition which comprises hydrated amorphous silica. Kawasaki teaches that hydrated amorphous silica is equivalent to fumed silica as a reinforcing agent for rubber, for the purpose of making a structural foam having good physical strength and hardness (column 6, lines 20 - 67; column 7, lines 1 - 43). The desirability of providing for hydrated amorphous silica in Wycech and Anfuso et al, which is a structural foam, would therefore be obvious to one of ordinary skill in the art.

It therefore would have been obvious for one of ordinary skill in the art at the time Applicant's invention was made to have provided for hydrated amorphous silica in Wycech and Anfuso et al. in order to make a structural foam having good physical strength and hardness as taught by Kawasaki.

4. Claims 8 - 9 and 20 - 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wycech (U.S. Patent No. 5,755,486) in view of Anfuso et al. (U.S. Patent No. 5,086,080) and further in view of Rowland (U.S. Patent No. 4,692,475).

Wycech and Anfuso et al. disclose composition useful for forming a reinforcing body and comprising azodicarbonamide as a blowing agent as discussed above. With

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regard to Claims 8 – 9 and 20 – 21, Wycech and Anfuso et al. fail to disclose a composition comprising a compound for lowering the blowing temperature of the composition. Rowland teaches the use of a blowing agent composition comprising azodicarbonamide and zinc oxide; the zinc oxide is used as a composition for lowering the decomposition temperature of the azodicarbonamide, therefore lowering the blowing temperature of the composition (column 4, lines 49 – 59); the composition is used for the purpose of manufacturing foamed products at low temperature (column 1, lines 57 - 60). The desirability of providing for a composition for lowering the decomposition temperature in Wycech and Anfuso et al, which is a foam, would therefore be obvious to one having ordinary skill in the art. It therefore would have been obvious for one of ordinary skill in the art at the time Applicant's invention was made to have provided for a compound for lowering the blowing temperature of the composition in Wycech and Anfuso et al. in order to manufacture the foamed product at low temperature as taught by Rowland.

As to the claimed aspect of the compound for lowering the blowing temperature of the composition being present at 5% by weight, it would be obvious for one of ordinary skill in the art to vary the amount of blowing agent disclosed by Wycech, Anfuso et al, Kawasaki et al. and Rowland and therefore the amount of the compound for lowering the blowing temperature of the composition used) since the amount of blowing agent used would be readily determined through routine optimization by one having ordinary skill in the art depending on the desired end result. *In re Boesch and Slaney*, 205 USPQ 215 (CCPA 1980).

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5. Claims 10 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wycech (U.S. Patent No. 5,755,486) in view of Anfuso et al. (U.S. Patent No. 5,086,080) and further in view of Kawasaki et al. (U.S. Patent No. 5,782,730) and Rowland (U.S. Patent No. 4,692,475) and Bagga (U.S. Patent No. 5,021,513).

Wycech, Anfuso et al., Kawasaki et al. and Rowland disclose a composition for forming a reinforcing body which comprises a pigment comprising carbon black, blowing agent comprising azodicarbamide, curing agent comprising dicyanamide and compound for lowering the blowing temperature of the composition comprising zinc oxide and catalyst comprising a modified urea as discussed above. With regard to Claims 10 and 22, Wycech, Anfuso et al, Kawasaki et al. and Rowland fail to disclose a modified urea comprising dimethyl phenyl urea. Bagga teaches the use of dimethyl phenyl urea as a cure accelerator for epoxy compositions when dicyanamide is used as the curing agent (column 1, lines 24 - 44), for the purpose of forming a cured composition which has excellent storage stability (column 2, lines 10 - 26). The desirability of providing for a modified urea comprising dimethyl phenyl urea in Wycech, Anfuso et al Kawasaki et al. and Rowland, which is comprise epoxy, would therefore be obvious to one of ordinary skill in the art.

It therefore would have been obvious for one of ordinary skill in the art at the time Applicant's invention was made to have provided for dimethyl phenyl urea in Wycech, Anfuso et al, Kawasaki et al. and Rowland in order to forming a cured composition which has excellent storage stability as taught by Bagga.

## ANSWERS TO APPLICANT'S ARGUMENTS

6. Applicant's arguments regarding the 35 U.S.C. 103(a) rejection of Claims 1 – 2, 4 – 7, 11 – 14 and 16 – 19 as being unpatentable over Wycech (U.S. Patent No. 5,755,486) in view of Anfuso et al. (U.S. Patent No. 5,086,080), 35 U.S.C. 103(a) rejection of Claims 3 and 15 as being unpatentable over Wycech (U.S. Patent No. 5,755,486) in view of Anfuso et al. (U.S. Patent No. 5,086,080) and further in view of Kawasaki et al. (U.S. Patent No. 5,782,730), 35 U.S.C. 103(a) rejection of Claims 8 – 9 and 20 – 21 as being unpatentable over Wycech (U.S. Patent No. 5,755,486) in view of Anfuso et al. (U.S. Patent No. 5,086,080) and further in view of Rowland (U.S. Patent No. 4,692,475) and 35 U.S.C. 103(a) rejection of Claims 10 and 22 as being unpatentable over Wycech (U.S. Patent No. 5,755,486) in view of Anfuso et al. (U.S. Patent No. 5,086,080) and further in view of Kawasaki et al. (U.S. Patent No. 5,782,730) and Rowland (U.S. Patent No. 4,692,475) and Bagga (U.S. Patent No. 5,021,513), of record in the previous Action, have been considered but have not been found to be persuasive for the reasons set forth below.

Applicant argues, on page 7 of the remarks dated December 27, 2005, that the rejection states no motivation to combine Wycech and Anfuso et al.

However, as stated above, one of ordinary skill in the art would therefore have recognized the advantage of providing for the SBS of Anfuso et al in Wycech et al, which comprises a foam, depending on the desired adhesion to impact resistance of the end product. It therefore would have been obvious for one of ordinary skill in the art at the time Applicant's invention was made to have provided for an SBS block copolymer in Wycech et al in order to obtain a foam having good impact resistance as taught by Anfuso et al.



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Applicant also argues on page 7 that there is no reason why one of skill in the art looking to improve on the foams of Wycech would turn to Anfuso et al; Anfuso et al, Applicant argues, teaches a method of making expandable beads.

However, as stated above, Wycech is directed to a foam; furthermore, Anfuso et al, because it is directed to expandable beads, is also directed to a foam. It therefore would have been obvious for one of ordinary skill in the art at the time Applicant's invention was made to have provided for an SBS block copolymer in Wycech et al in order to obtain a foam having good impact resistance as taught by Anfuso et al.

Applicant also argues, on page 8, that one of ordinary skill in the art knows that when a foam expands, the foam loses compressive strength; one of ordinary skill in the art, Applicant argues would therefore not expect a foam to have both the percent expansion and compressive strength of Claims 13 – 27.

However, it is not clear from Applicant's statement why all foams necessarily lose compressive strength upon expansion, or why a loss of compressive strength would necessarily be sufficient to prevent both the percent expansion and compressive strength of Claims 13 – 27.

Applicant also argues on page 8 that the combination of Wycech and Anfuso et al does not teach a foam that has the expansion percentage and compressive strength of Claims 13 – 27; thus, Applicant argues, there is no prima facie case of obviousness, and no evidence of unexpected results is necessary.

However, as stated above, although the combination of Wycech and Anfuso et al does not teach a foam that has the expansion percentage and compressive strength of Claims 13 – 27, it would be obvious for one of ordinary skill in the art to obtain a foam

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that has the expansion percentage and compressive strength of Claims 13 – 27 through routine optimization, thus there is a prima facie case of obviousness.

Applicant also argues on page 8 that a declaration has previous been submitted which shows that the combination of Wycech and Anfuso et al does not teach a foam that has the expansion percentage and compressive strength of Claims 13 – 27.

However, as stated above, although the combination of Wycech and Anfuso et al does not teach a foam that has the expansion percentage and compressive strength of Claims 13 – 27, it would be obvious for one of ordinary skill in the art to obtain a foam that has the expansion percentage and compressive strength of Claims 13 – 27.

Applicant also argues on page 8 that if more expandable beads are added to the Wycech composition, the compressive strength would be lower than that of Wycech.

However, as stated above, Anfuso et al is cited for the teaching that SBS block copolymer is equivalent to polyisoprene in the making of a foam for the purpose of making a foam having good impact resistance; the rejection does not state that the foam of Wycech is made by the expansion of expandable beads, like the foam of Anfuso et al.

Applicant also argues that the expansion percentage and compressive strength constitute a surprising and unexpected result.

However, it is not clear why the expansion percentage and compressive strength of the claimed invention would not be expected by one skilled in the art.

Applicant also argues, on page 9, that the rejection provides no evidence that one of ordinary skill in the art would have expected the combination of Wycech and Anfuso et al to produce the unexpected results of the claimed composition.

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However, as stated above, it is not clear why the expansion percentage and compressive strength of the claimed invention would not be expected by one skilled in the art.

Applicant also argues, on page 10, that polyisoprene and SBS block copolymer are so functionally and structurally different from each other that one of ordinary skill in the art would not replace one with the other.

However, as stated above, Anfuso et al teach that polyisoprene and SBS block copolymers are equivalent for use in a foam which is used in structural applications; Anfuso et al therefore teach that polyisoprene and SBS block copolymer are not so functionally and structurally different from each other so as to exclude replacement of one elastomer with the other.

Applicant also argues, on page 10, that unexpected results are shown in Examples 5 – 7, where it is shown that the claimed composition had the claimed expansion and compressive strength, but the composition could not be formed without SBS and other rubber, and had a compressive strength less than the claimed compressive strength when SBR was added; the claimed expansion and compressive strength, Applicant argues, is upset easily by tinkering with ingredients.

However, it is unclear why the result that the claimed expansion and compressive strength is upset easily by tinkering with ingredients is unexpected.

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc A Patterson whose telephone number is 571-272-1497. The examiner can normally be reached on Mon - Fri 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon can be reached on 571-272-1498. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Marc Patterson 3/20/06*

Marc A. Patterson, PhD.  
Primary Examiner  
Art Unit 1772